

## CLAIMS

What is claimed is:

1. An air cleaner housing for holding a cylindrical filter element and providing a laminar  
5 flow of air to a carburetor of a vehicle engine, said housing comprising:  
a bottom plate having an outer peripheral portion;  
a top cover spaced above said bottom plate, said top cover having a top peripheral portion  
above the outer peripheral portion of the bottom plate;  
said bottom plate, top cover and the cylindrical filter element defining a chamber for  
10 filtered air entering said chamber through the cylindrical filter element;  
said bottom plate having a convex section radially inward of said outer peripheral  
portion, a bottom venturi section radially inward of said convex section, a planar section radially  
inward of said bottom venturi section, and an annular wall radially inward from said planar  
section and extending away from said top cover;  
15 said top cover having a convex section radially inward of said top peripheral portion, a  
concave section radially inward of said convex section, and a planar section radially inward of  
said concave section, where said convex section is at least partially positioned over said bottom  
venturi section of said bottom plate.
- 20 2. The housing of Claim 1 wherein said bottom plate further comprises a concave section  
transitioning from said convex section to said bottom venturi section.
3. The housing of Claim 1, said top cover additionally comprising a depression radially  
inward of said convex section; and  
25 said depression being positioned over an outlet defined by said annular wall of said  
bottom plate.

4. An air cleaner housing for holding a cylindrical filter element and providing a laminar flow of air to a carburetor of a vehicle engine, said housing comprising:

a bottom plate having an outer peripheral portion;

a top cover spaced above said bottom plate, said top cover having a top peripheral portion

5 above the outer peripheral portion of the bottom plate;

said bottom plate, top cover and the cylindrical filter element defining a chamber for filtered air entering said chamber through the cylindrical filter element;

said bottom plate having a contour extending radially inward from said outer peripheral portion, said contour being approximated by a first equation

$$y_1 = \sum_{i=0}^n a_i x_1^i$$

15 wherein  $x_1$  is an independent variable on the interval 130 to 704;

$y_1$  is a variable dependant upon  $x_1$ ;

$a_i$  is a constant taken from the set of

$$a_0=4985.318;$$

$$a_1=-121.16523;$$

$$a_2=1.2687824;$$

$$a_3=-0.0070787996;$$

$$a_4=2.2003603e-05;$$

$$a_5=-3.3993253e-08;$$

$$a_6=6.3768494e-12;$$

$$a_7=5.5080608e-14;$$

$$a_8=-5.2974058e-17;$$

$$a_9=-3.3657906e-20;$$

$$a_{10}=4.6965338e-23;$$

$$a_{11}=4.2960913e-26;$$

$$a_{12}=-5.4097746e-29;$$

$$a_{13}=-2.0260889e-33;$$

$$a_{14}=-2.4257828e-35;$$

$$a_{15}=5.4669649e-38;$$

$$a_{16}=2.8181943e-42;$$

$$a_{17}=-4.7997388e-44;$$

$$a_{18}=2.9677608e-47;$$

$$a_{19}=-5.6220424e-51;$$

said top cover having a contour extending radially inward from said top peripheral portion, said contour being approximated by a second equation

$$y_2 = \sum_{i=0}^n b_i x_2^i$$

wherein  $x_2$  is an independent variable on the interval 130 to 1089;

$y_2$  is a variable dependant upon  $x_2$ ;

$b_i$  is a constant taken from the set of

$$b_0=4985.318;$$

$$b_1=-121.16523;$$

$$b_2=1.2687824;$$

$$b_3=-0.0070787996;$$

$$b_4=2.2003603e-05;$$

$$b_5=-3.3993253e-08;$$

$$b_6=6.3768494e-12;$$

$$b_7=5.5080608e-14;$$

$$b_8=-5.2974058e-17;$$

$$b_9=-3.3657906e-20;$$

$$b_{10}=4.6965338e-23;$$

$$b_{11}=4.2960913e-26;$$

$$b_{12}=-5.4097746e-29;$$

$$b_{13}=-2.0260889e-33;$$

$$b_{14}=-2.4257828e-35;$$

$$b_{15}=5.4669649e-38;$$

$$b_{16}=2.8181943e-42;$$

$$b_{17}=-4.7997388e-44;$$

$$b_{18}=2.9677608e-47;$$

$$b_{19}=-5.6220424e-51; \text{ and}$$

$$n=19.$$